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Operationalizing Sustainability

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Abstract

Within this "how to" practices-based study is a generalizable framework of engagement and collaborative learning to operationalize sustainability for any organization. Purposefully cultivating the application of cross-disciplinary engagement, a phased approach is proposed to understanding complex, real-world sustainability challenges while making them material to an organization. Practical value for managers and future change agents includes a systematic approach, creative solutions, and feasible recommendations for new value propositions. Contributions of operationalizing sustainability include, but are not limited to: a structured approach to building a shared understanding of the sustainability paradigm; benchmarking; brainstorming; and prioritizing best-practice options. Pedagogical value for business students (and faculty) includes improved skills for framing complex problems, first-hand insight, research to emerging business challenges, and increased cross-discipline integration. Based on several years of applied insight with practitioners and graduate business students, operationalizing sustainability provides new integration opportunities for strategic planning and day-to-day activities. Information within this study will help readers understand the why, what, and how of operationalizing organizational practices aligned with strategy and a shared vision of a sustainable future.

Introduction

Too often, management researchers and practitioners claim that recycling, waste reduction, green purchasing, and energy conservation programs are "sustainable," yet in reality they may only address environmental or efficiency practices. These claims, and multiple definitions of sustainability (see for example the UN's Brundtland Report[1], or Erhenfeld's abandonment of the word to instead use "flourishing[2]," or search using Google and you will get over 114 million results), create confusion across disciplines and inaction for many. Unfortunately, none of the definitions provide sufficient direction to translate sustainability into practical action. Due to confusion surrounding a single definition of "sustainability," the information presented in this study puts forth the idea that sustainability, as a paradigm for business management, is a shared vision aligned with strategy that provides an integration opportunity within and across firms. To this end, it is important to note that decision makers for any organization, whether for-profit or nonprofit, should develop their own individual approach to operationalizing this dynamic paradigm.

What stakeholders really want to know when they ask how you define sustainability is, "Is your company working towards sustainable development or against it?"[3] Despite prior efforts to bring about an understanding of sustainability, there has been continued confusion regarding how it should be defined.[4] There has been a large amount of work done in consolidating research in the management literature[5] reviews involving supply chains[6] and manufacturing;[7] yet confusion remains regarding why and how successful corporations engage in and signal important operations.

Prior research has also shown that the existing definitions of corporate social responsibility, a predecessor to more current research involving sustainability, are to a large degree congruent.[8] Others suggest that the confusion is not so much about how sustainability is defined, as much as it is about how sustainability is operationalized in a specific context.[9] This confusion presents an opportunity for clarity in providing a customized approach to operationalizing sustainability.

Despite the thousands of pages and papers written by academic scholars, defining the sustainability paradigm in one sentence is not meaningful for practitioners. For over four decades, the messages from environmentalists have been basically the same: human activities impact the earth in negative ways and we have to make tradeoffs. These tradeoffs influence conventional approaches to efficiency and waste reduction. They are a good starting point, yet a "conservation and tradeoff" mentality can discourage practitioners and students from developing more innovative approaches to solving complex problems. To this end, and for the focus of this study, we need to build a better shared understanding and vision of our common future that is accessible to practitioners and academics. To start, we can properly position sustainability while operationalizing activities to support it.

Sustainability should be the end goal and a broad term that, when understood as an integration opportunity for organizations, reveals interrelated value-creating activities. This value creation involves how resources are managed and the actual processes of acquiring, measuring, and reporting those resources. Individuals, businesses, and government entities are all involved in these integration practices to some extent. This evolving field of inquiry and practice is often

separated into 3 interrelated categories of resources—financial, social, and environmental—while providing new opportunities to operationalize activities and measure performance.

A primary assumption within this study is that sustainability provides a new integration opportunity to organizations, and an integrated approach to thinking and decision analysis will lead to better understanding of the value creation process. It is easy to say that value creation is important, yet not so easy to make it influence strategy and the decisions that are made every day, e.g. where to spend time and resources, how best to get things done, and, ultimately, how to win in the marketplace. Thus, the information within this study is designed to accelerate the integration between management actions, value creation, and the goal of a sustainable future.

The drivers of innovation and the connections between sustainability and organizations have become focal points for research and for the development of management practices and performance measurement. Sustainable development, "the transition from the current, unsustainable society to a sustainable society[,]…can also refer to society's further development once it has become sustainable."[10] This understanding of sustainable development helps draw attention to the idea that sustainability is the overarching goal. This also places practical importance on what organizations do to move toward the sustainability goal.

This study aims to enable integration efforts in the context of a systematic approach to operationalizing a vision, shared understanding, baseline assessment, and an action-oriented approach to prioritizing next steps. When operationalizing sustainability in this way, managers within organizations can better enable short-term and long-term activities to integrate sustainability into value-creating processes and management planning. In doing so, the outcomes of this applied, problem-based learning approach facilitate a shared understanding of what sustainability means to an organization and how to work collaboratively across disciplines to prioritize what needs to be done. Thus, the primary questions addressed by this study are 1) "How do we translate sustainability into practical action?" and 2) "What aspects of operationalizing this paradigm will be material to stakeholders?"

In what follows, there is a review of problem-based and action-learning focused approaches for operationalizing sustainability. A primer on facilitation sets the stage for the ABCD planning approach as part of the Framework for Strategic Sustainable Development.[11] Then, example outcomes are provided for context before discussing conclusions.

A Problem-Based Action Learning Approach

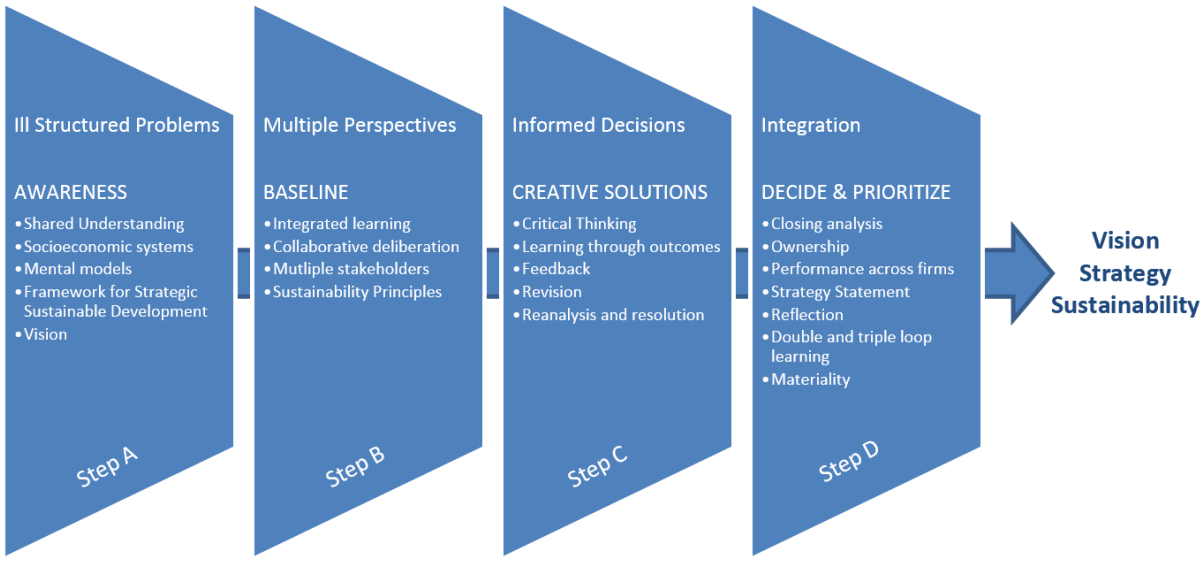
For the purpose of this planning process, "material" topics for an organization should include those "topics that have a direct or indirect impact on an organization's ability to create, preserve, or erode economic, environmental and social value for itself, its stakeholders and society at large."[12] Materiality is an important context for engaging people across disciplines and functions. It provides a virtual place and space in which everyone can contribute their abilities and expertise to solve a common problem while understanding what is material to the organization. In this case, the problem is how to get to a shared understanding of what a sustainable future will look like, and what actions will take us from our current "as is" reality to that sustainable "to be" future.

Here problem-based action learning provides a foundation to collaboration and complex problem-solving. Torp and Sage[13] described a problem-based approach as focused, action learning organized around the investigation and resolution of messy, real-world problems. When operationalizing sustainability, participants are engaged problem-solvers who seek to identify root problems and the conditions needed for solutions; in the process, they become self-directed learners. Further, Hmelo-Silver[14] described the problem-solving approach to collaborative inquiry where participants learn through facilitated problem-solving that centers on a complex problem that does not have a single correct answer. The author goes on to suggest that participants work in collaborative groups to identify what they need to learn (i.e., what a vision of sustainability will look like) to be able to solve a problem (identify and prioritize what actions to take). To this end, participants engage in self-directed learning, apply their new knowledge to the problem, and reflect on what they learned and the effectiveness of the strategies employed. The characteristics of a problem-based approach, as summarized by Savery in a review of prior works including Barrow and Tamblyn's essential characteristics, include but are not limited to:[15]

- The problem is to be ill-structured and allow for free inquiry.
- Participants must have responsibility for their own contributions and learning.
- Contributions and learning should be from a wide range of disciplines or subjects.
- Collaboration across disciplines is essential.
- Participants' self-directed learning must be reapplied to the problem's reanalysis/resolution.
- Essential components of the process are a closing analysis of what has been learned from work with the problem and a discussion of what has been learned.
- The activities carried out must be those valued in the real world.
- Participant assessment must measure progress towards the problem-based goals.
- Self and peer assessment should be carried out at the completion of an activity and at the end of curricular units.
- This type of learning must be the pedagogical base in curriculum and not part of a didactic curriculum.

Of these characteristics, the last two are more explicitly focused on curriculum opportunities. The proposed approach to engaging an organization or the inclusion of this type of planning exercise in business management pedagogy closely parallels Savery's essential characteristics of problem-based learning and is supported by DeFillippi and Milter's work.[16] Figure 1 presents a generalizable, problem-based learning approach to operationalizing sustainability.

Figure 1. Organizational Integration towards Sustainability



The conceptual framework in Figure 1 is a hybrid approach with an action learning foundation enabled by the Framework for Strategic Sustainable Development's ABCD planning process as a platform for collaboration. As Senge, Lichtenstein, et al.,[17] observed when investigating collaborative opportunities among corporations, "Meeting the sustainability challenge will require the kind of cross-sector collaboration for which there is still no real precedent." With a multidisciplinary approach to problem-solving around sustainability, the focus is on developing understanding and applying the skills to create a vision of the future and then back-cast to today to see what actions can be taken.

Success in any collaboration rests on the quality of the relationships that shape cooperation, trust, and joint learning.[18] The topic of sustainability is well-positioned for purposefully cultivating opportunities for framing complex issues, promoting relational collaborative inquiry, and designing actionable change initiatives. When doing so, sustainability is a lens by which we can see into the future while keeping the focus on forward-looking challenges and capabilities.

Sustainability can be a new and daunting challenge for organizations, especially considering that "in the reality of contemporary work organizations, managerial capabilities have typically been acquired through work experiences. For example, studies show that 70-90% of workplace learning occurs through on-the-job experiences, informal training, and mentoring."[19] Organizations not wanting a large up-front investment in external consultants can utilize the approach in this study to work up to larger investments in time, effort, and capital resources after first getting a shared understanding of what to do next. Here, it is important to note that the exercise of operationalizing sustainability provides practitioners with a practical opportunity to better understand their organization. For business students given the opportunity to go through this approach with an organization, there is a promising action learning opportunity. This learning is based on contemporary management challenges, will be remembered long after graduation, and can be replicated in any organization they may join.

Collaborative Action

For some time now, I have been involved with organizations and graduate students trying to define sustainability within an organizational context. Knowing that no one definition will fit everyone's needs, we needed a customized approach. The aim was not to define sustainability, but instead to understand how to relate this trending topic into action. Based on years of application within courses and while working with corporate, small and medium enterprise, and NGO clients, the proposed approach is one way for an organization to develop and define the goals, scope, and actions strategically aligned with a vision of a sustainable society. As we know all too well, business schools can be dominated by stand-alone functional areas, and sustainability topics are rarely integrated with essential management content in these fields. However, combining sustainability with action learning to address emerging business challenges offers exceptional opportunities to cut across disciplines and to propose new courses. Here sustainability can be a catalyst for a new era in multidisciplinary collaboration that offers promise for addressing the complex, ambiguous challenges (e.g. poverty alleviation, education for girls, water scarcity, etc.) in a dynamic, global market.

In the proposed approach, participants' understanding from their own functional perspective is applied to meet the evolving needs of their organization. This process should be repeated as organizations progress toward sustainability and integrate this into regular planning cycles. To this end, teams should work across an organization to deliver innovative recommendations and better understand the sustainability integration opportunities within the organization. This action learning approach enables senior and middle managers from an organization to better identify and understand the hidden challenges of capitalizing on emerging opportunities for competitive advantage through responsible management of shared resources.

With the idea of acting on emerging opportunities, Senge, et al.[20] posed an interesting question: How can we get beyond benchmarking to build learning communities? The answer for organizations ready to take on a sustainability challenge is through integration and collaboration—where participants work together to solve real problems, offering analysis and recommendations that have financial, social, and environmental value aligned with a strategic vision of the future.

The process of operationalizing sustainability can provide insight as to how an organization implements sustainability on a day-to-day and strategic planning level. This approach can be used by stakeholders internally (for employees, managers, executives) or externally (for the media, stockholders, NGOs, or financial institutions that invest in the company's operations). Operationalizing sustainability aligns stakeholder interests with guidance for how to address issues that arise from a company's economic, environmental and social activities.

Building on prior work, Blackburn's model of sustainability policy provides a foundation to organize thinking around material organizational activities.[21] This, coupled with Elkington's Triple Bottom Line, provides a generalizable framework for the proposed approach that explicitly challenges participants to review and include actions that are material to the organization. Knowing there are competing approaches to understanding and integrating sustainability—systems innovation,[22] value mapping,[23] systems thinking for policy makers,[24] and even specific templates for new product development,[25] to name a few—we have

continually opted for a more general approach. A successful approach to this exercise provides a compass that stakeholders can use to navigate everyday issues and decision-making. To better understand how to operationalize sustainability, participants need to assess what organizational practices are expected within the industry. The practical importance of this process is recognizing what is material for the firm, i.e. what stakeholders deem important and what is within the control of the organization. This materiality needs further assessment in order to compare and contrast the competing material needs of the organization with short-term and long-term goals, resources, and the changing competitive landscape.

To better understand any organization, it is critical to think about actions within the context of an Integrated Bottom Line (IBL) where financial, social, and environmental resources can be valued and used in planning, decision-making, and reporting. To kick-start this integrated approach, start by proposing the following questions and scenario to the team of participants. Imagine a sustainable world 50 or 100 years from now:

1. Describe the ways in which you hope the world will be more sustainable—how will it be different from today?
2. If the population levels off at 12 to 15 billion people, what systems and technologies will be necessary to provide adequate food, clothing, and shelter?
3. What kinds of sustainable business practices will be part of this future?

This first set of questions gets participants thinking about a vision of a sustainable world and the systems that will support it. Then, the following questions can help bring this future vision back to a more grounded current reality by asking if the organization contributes to or negatively impacts this future vision in the following ways:

4. Why is sustainability important to our industry and this organization?
5. How do our activities impact economic viability of the organization and global community?
6. How do our activities impact social well-being of employees and community?
7. Do our activities impact the environment in a way that replenishes or diminishes natural resources?

As Peter Drucker once said, “every single social and global issue of our day is a business opportunity in disguise”.[26] By contemplating and answering these questions, a participant can specify the responsibilities and actions of an organization that align with the needs of a sustainable society. Something to keep in mind for this exercise is that the long-term success of the organization is dependent upon and aligned with the long-term success of society and the communities in which the organization operates. Decisions made today and tomorrow will have both short-term and long-term impacts. Without aligning those decisions to a vison of a sustainable future, the organization and people connected to it will not generate value in ways that contribute to this future reality. The range of kick-off questions implies that sustainability is already part of organizations and society, yet this level of understanding may not be fully grasped by many within an organization. For some, the ambiguity in understanding this opportunity may be overwhelming and difficult to commit to. For others, the input to a brainstorming session and visualization of the future is a welcome opportunity for reflection and

thinking about how to find new business value within an organization. The process of facilitation as applied to brainstorming is therefore reviewed. This approach to collaboration aims to get individuals to look beyond their functional disciplines; to understand, be part of, and see relationships to and connections with the external world on which they are dependent.

Facilitation and the Strategic Planning Process

Brainstorming with a group of people is a powerful and creative technique for capturing new insights. Brainstorming can create bold ideas, solve existing problems, and develop collaborative teams. It can also motivate organizations by involving participants in bigger management issues-and getting people working together. To better ensure success, facilitated sessions need to be structured and follow some general rules. The brainstorming process is such that everyone must be able to see what's happening and to have their contributions acknowledged. This places a burden on the facilitator to manage the process and participants' level of engagement, and then to manage follow-up actions. When done successfully, brainstorming provides impactful results in improving the organization's performance and collaboration. As experts know, the trick is to leverage the way people actually think and work in creative problem-solving situations. McKinsey calls this "brainsteering".[27] If done purposefully and with a focused, questions-based approach, managers and faculty can more consistently get better ideas from participants.

A facilitated, stepwise process is designed to be used in team-based workshops to get people thinking creatively and to develop lists of action items for planning and implementation. "It can also be a tool for analysis, vision creation, program design, tool development, community building, and leadership."[28] Much like the operations management literature involving the Plan, Do, Check, Act cycle,[29] this methodology is best when repeated as part of regular planning cycles. It should involve people from across disciplines, especially those who do not agree with you on a regular basis, and should be integrated into future meetings and planning practices. This repetition builds collaboration across the organization while working on sustainability and facilitates buy-in regarding organizational strategy and change management.

For more specific information on the ABCD process, see The Natural Step web site, along with publications by Broman and Robért.[30] For the purposes of this action learning exercise, this process is summarized below.

Step A: Building a Shared Understanding and Vision. The participants involved in the exercise create a shared mental model of what a sustainable future will look like including socio-economic systems and sustainability challenges. Using the first three questions while envisioning a sustainable world 50 or 100 years from now is a purposeful start to this brainstorming exercise. This first step enables a shared understanding of the issues an organization and industry face. Step A also allows for the application of the framework for strategic sustainable development and a science-based approach to identifying issues and opportunities for the firm.[31] Participants should ask themselves, "Does this vision of the future enable the organization to provide products or services in new ways, what as an organization do we want to create, and how do we integrate sustainability with current goals, actions and strategy of the organization?"[32] The answers to these questions do not have to come out of this

first step, but instead are transitions to subsequent steps, further research, and analysis. This initial vision is iterative and can and should be modified or changed when going through the rest of this exercise and as part of future planning practices. See Figure 1 for how this stepped process and integration of sustainability is supported by a problem-based approach to learning and collaboration.

Step B: Assessing the Current Reality. Here the team benchmarks the organization's "as is" activities according to how these activities contribute to sustainability or unsustainability. This step generates a list of current activities and assesses impacts and contributions to socio-economic systems. Impacts and contributions can be in the form of products, services, and existing investments in efficiency and waste reduction initiatives.

When reviewing these activities, it is important to acknowledge negative impacts. To this end, there are basic sustainability principles that provide explicit guidance for individuals or any organizations interested in moving towards sustainability. "In a sustainable society, nature is not subject to systematically increasing … (1) concentrations of substances from the earth's crust (such as fossil CO_2 and heavy metals), (2) concentrations of substances produced by society (such as antibiotics, pollution, and endocrine disruptors), (3) degradation by physical means (such as deforestation and draining of groundwater tables), and in that society …(4) there are no structural obstacles to people's health, influence, competence, impartiality and meaning."[33]

Here participants can look for potential weaknesses in the organization such as dependence on fossil fuels, use of hazardous materials, contributions to the degradation of natural resources, or involvement in activities that compromise human safety, health, or living standards. This step can be considered a benchmark or SWOT (strengths, weaknesses, opportunities, and threats) analysis, with specific activities set up for follow-up research and analysis after the exercise.

Step C: Brainstorming Actions to Close the Gap. Next, there is typically a chasm to cross between the current reality and the sustainable vision. This step involves brainstorming a list of actions, collaborative efforts, and investments that will help the organization to cross this chasm to a more sustainable future reality. These actions can involve raw material substitutions, new product and service design, energy systems, goals of zero waste, 100% renewable energy, and closed loop systems, and should involve both short-term and long-term opportunities. In this step, participants can review the examples and the lists of topics from Appendices 1 – 4[34] to see what resonates with their organization and to check if they may have missed something.

Step D: Prioritization. In this step the team analyzes the list of what is possible from the previous step. Asking three primary questions outlined by Robért et. al.[35] will help move this analysis along. First, does the proposed action lead toward sustainability? Next, can the action be a platform onto which we build future improvements? Finally, does it provide a sufficient value proposition and return on investment? Whether an organization is publicly traded or not, value creation can be looked at as opportunities for revenue growth, operating margin, asset efficiency and even stakeholder expectations.[36] When prioritizing actions in this way, participants can focus resources on investments that are material to the organization and can provide an Integrated Bottom Line return sufficient to ensure the continued success of the organization and other competing actions. When assessing materiality, organizations typically

look at what responsibilities and actions are important to stakeholders and what actions are within the control of the organization. Other questions to ask during this step include 1) what are the most strategic actions we can take and 2) are there any significant risks or opportunities that we should be aware of within our value chain?

Building on the findings of Step C, the thinking and prioritization here provides an opportunity to develop a summary strategy statement regarding sustainability and the key areas of alignment for the organization. Figure 2 offers an example from Blackburn[37] of how to capture sustainability actions relevant to an organization within a relatively brief strategically aligned statement.[38] Step D is an important part of problem-based learning as the outcomes are reinforced through participant ownership of the learning process, repetition, and leveraging double- and triple-loop learning feedback cycles.[39] The outcomes of this step not only set into motion short-term and long-term actions, but also allow managers to review day-to-day decisions and resource allocations to help ensure they are in line with the organizational strategy and vision of sustainability.

If there are further opportunities for public disclosure of actions, the Global Reporting Initiative (GRI) G4 Sustainability Reporting Guidelines suggest an organization should identify, prioritize, validate, and review information relevant to internal and external stakeholders.[40] Operationalizing sustainability can be the catalyst for understanding what is material to an organization and for later external reporting efforts. The process of operationalizing and use of the four-stepped planning process aligns well with the use of the GRI guidelines for reporting.[41]

Figure 2. Strategy Statement Example

The Vision: It is in the best interests of our company and society as a whole that our company moves along the path to sustainability. To that end, we will strive to achieve the following vision of performance.

1. **Economic success: the wise use of financial resources for**
   a. Company Economic Prosper = Our business is positioned to survive and prosper economically.
   b. Community Economic Prosperity = We help our community survive and prosper economically.
2. **Social responsibility: respect for our employees and people to enable**
   a. Respect for Employees = We treat our employees in a respectful, fair, non-exploitative manner, especially with regard to compensation and benefits; promotion; training; open, constructive dialogue with management; involvement in decision-making; working conditions that are safe, healthy, and non-coercive; rights of association, collective bargaining, and privacy; employment-termination practices; and work-life balance.
   b. Diversity, Fair Hiring practices = We promote diversity and use hiring practices that are fair, responsible, non-discriminatory, and non-exploitative for our employees, board members, and suppliers.
   c. Responsible Governance = We manage our risks properly, use our economic power responsibly, and operate our business in a way that is ethical and legal.
   d. Respect for Stakeholders = We are transparent, respectful, and fair to local populations, investors, suppliers and other stakeholders outside of our organizations who may be affected by our operations. We work collaboratively with our communities to enhance the well-being of others.
   e. Fair Dealing with Customers = We are honest and fair with our customers, competing fairly for their business, respecting their privacy, and providing them safe and effective products and services under the conditions we promise.
3. **Environmental responsibility: respect for life and the wise management and use of natural resources**
   a. Resource Conservation = We conserve our use of natural resources to the extent practicable.
   b. Waste Prevention and Management = We reduce to the extent practicable the quantity and degree of hazard of the wastes we generate from our operations, and handle them in a safe, legal, and responsible way to minimize their environmental effects.
   c. Environmental Risk Control and Restoration = We minimize the risk of spills and other potentially harmful environmental incidents, restore the environment where damaged by us, and enhance it to better support biodiversity.
   d. Reduction of Supply Chain Impacts = We work with others in our supply chain to help reduce and control adverse environmental impacts and risks associated with our products and services, and to optimize environmental benefits.
   e. Collaboration with Communities = We collaborate with our communities to protect and improve the environment.

Modeled after the process outlined above, we have tasked incoming graduate business students with developing their own strategic statement to guide their graduate experience and future careers as creators of sustainable value. Before introducing the topic of sustainability, we have participants answer the question "What is sustainability?" and have them place their answer in a sealed envelope. This envelope can be reflected upon at the end of a facilitated workshop or at the end of a semester to see how the participant's thinking has changed regarding the definition of sustainability and how it relates to the organization.

One example of a cohort's approach to operationalizing sustainability started during orientation in this way and continued into their first semester with online collaboration and multiple iterations to result in this summary statement:

> Our vision of sustainable performance includes researching and developing responsible business opportunities for an Integrated Bottom Line that is economically, environmentally, and socially beneficial. The program's *economic success* will depend on brand strength, community prosperity, value creation and return on investment. *Environmental responsibilities* include resource conservation, recycling, reduction of supply chain impacts, collaboration with communities, closed loop systems, the pursuit of energy efficiency and renewable energy sources. Our *social responsibility* includes action learning, working with corporate sponsors on the business case for sustainability, respect for stakeholders, systems thinking across disciplines, and an ethical approach to decision making.

The students' statement provided a foundation and rationale for the collaboration of faculty and industry partners for components of a graduate business program. Here curriculum design can specifically integrate cornerstone and capstone action learning that emphasizes sustainability.

Conclusions

Collaborative, cross-discipline problem-based learning ties theory to practice when conducted in a real-world setting with real-world consequences. Much like any Plan, Do, Check, Act cycle and planning initiative, there need to be opportunities for follow up, implementation, and review of progress. The proposed process for operationalizing sustainability can help find short-term, easy-to-implement actions while also setting organizational sights on long-term goals of zero waste, regenerative buildings, 100% of energy coming from renewable sources, reduction of poverty, resilience to drought, or the elimination of diseases. Part of this stepped process should always include action items for immediate work, planning the next round of meetings, and integration of sustainability into regular organizational meetings and performance evaluations.

What is important about operationalizing sustainability is more than the issues participants work on. It's moving beyond single-loop learning to deep reflection and examination of the assumptions driving organizational decision-making. The bigger picture is about the participant's individual and collective reflection and understanding of their organization's practices and how to challenge the status quo with new value propositions. Without this perspective, commitments to sustainable practice remain focused on relatively simple environmental and efficiency measures or one-off projects.

The development and delivery of applied coursework is the future of the business school curriculum. Armed with models, frameworks, and action learning, any business program can integrate sustainability and transform the way we think about the future. It is important to recognize that faculty who play a facilitating role and clients who collaborate with students to assess and solve problems also benefit from this action learning approach.[42]

The benefits to individual skill development and the capabilities of multidisciplinary teams of operationalizing sustainability with this problem-based approach should not be underestimated. This staged process enables teams to be responsible for their learning and outcomes, provides meaningful work with multiple stakeholders facilitating collaboration and analysis of alternatives, and supports skill development through outcomes and feedback resulting in ownership, complemented by double- and triple-loop learning.[43] Through action learning experiences such as this, participants gain an understanding of what sustainability can mean to them.

Working under the assumption that we do not have to redefine sustainability, the proposed model and approach to operationalizing sustainability will help organizations and individuals better understand this burgeoning sustainability paradigm by enabling practical management action. This approach has real potential in the development of a new performance frontier,[44] skill development, learning,[45] knowledge management,[46] and management research. Senge, et. al.,[47] posed the question: "How can we get beyond benchmarking to build learning communities?" The answer for both organizations and individuals can be found in the integration opportunity provided by sustainability as an end goal, and the identification of material actions to strategically move toward this goal. For academic institutions, learning communities and new pedagogy can be found through courses that require cross-functional content integration and non-traditional human collaboration—where students work with high-level practicing professionals to solve real problems. In these emerging communities, students and faculty will offer recommendations that have Integrated Bottom Line (IBL), financial, social, and environmental consequences. Those participants who engage in first-hand learning, research, and analysis while operationalizing sustainability will develop actionable solutions that cut across disciplines, engage value chains and align industries to move toward the goal of sustainability.

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Appendix 1. Examples of economic topics to review include but are not limited to:		
Asset efficiency	Financial assets received from the government	R&D investment
Brand strength	Impact investing	Ratios of entry wage by gender compared to local minimum wage
Capital expenditures	Indirect economic impacts	Receivables and payables
Cash flow	Infrastructure investments	Retained earnings
Community donations	Infrastructure services supported	Return on investment
Cost of goods sold	Integrated sustainability and financial reporting	Revenue growth
Coverage of organizations defined benefits plan	Integrated Bottom Line (IBL)	Risk management
Credit rating	Liabilities	Sales
Debt and interest	Local purchasing	Shareholder value
Dividends	Market share	Socially responsible investing
Economic value generated	Operating margins	Social Cost of Carbon (SCC)
Economic value distributed	Price realization	Taxes
Expectations	Profits	Tax subsidies
Financial risks due to climate change	Proportion of spending on local suppliers	Volume
Financial opportunities due to climate change	Proportion of senior management hired from local community	Wages

		(add your own)

Appendix 2. Examples of social topics to review include but are not limited to:		
Access to products/services by the disabled, or poor	Employee layoff policies	% of workforce represented on OSHA committees
Anti-sexual-harassment policies	Employee privacy	Predatory lending
Antitrust practices	Employee relations	Producer responsibility
Approach to stakeholder engagement	Employee shared values	Product labeling
Assistance in managing career endings	Employee training/development	Product quality
Bioterrorism	Employee wellness programs	Product safety
Board diversity	Employee work-life balance	Product and Service Labeling
Bribery and corruption	Ethical and lawful behavior	Record of stakeholder groups engaged
Charitable donations	Fair advertising and labeling	Return to work, retention rates after parental leave
Child labor	Fair wages	Securities regulation
Community education	Flexible work options	Skills management programs, lifelong learning
Community outreach	Food product nutrition, obesity	Socially responsible sales and marketing practices
Consumer privacy	Forced labor	Supplier diversity
Corporate governance, structure, and composition	Helping the disadvantaged	Supplier work practices

Customer Health and Safety	Human rights (security policies, etc.)	Support for community services
Customer privacy	Impacts on local cultures	Training by gender and employee category
Dependent care benefits	Indoor air pollution	Transparent public reporting
Digital divide in e-access	Industrial hygiene	Types of injury and rates of injury by region and gender
Disaster relief	Labor/management relations	Union relations
Disciplinary practices	Legal compliance on social topics	Worker violence
Emergency preparedness	Non-discrimination policies	Workers high incident/risk of disease for occupation
Employee benefits	Occupational health	Workplace safety
Employee diversity	Political contributions	
Employee hires, training, and turnover: age, gender, region	Performance review by gender, and region	
		(add your own)

Appendix 3. Examples of Societal topics to review include but are not limited to:		
Access to healthcare by the poor	Investments that included human rights clauses or screens	Operations or supply chains have significant risk for child labor and the action taken to abolish child labor
Communication and training of anti-corruption policies and procedures	Legal actions for anti-competitive behavior and anti-trust	Security personnel trained in human rights policy
Confirmed incidence of corruption and actions taken	Monetary value and sanctions for non-compliance with laws	Suppliers screened using criteria for impacts on society
Diversity and equal opportunity	Operations assessed for risks related to corruption	Suppliers screened using labor practices criteria
Grievances about human rights, addressed, and resolved through formal processes	Operations implemented with local engagement	Suppliers screened using human rights criteria
Grievances about impacts on society filed, addressed and resolved through formal mechanisms	Operations planning includes indigenous rights	Ration of basic salary and remuneration of women to men, by employee category and region
Grievances about labor practices and how they were addressed	Operations or supply chains have significant risk for forced or compulsory labor and the action taken to abolish this	Significant actual and potential impacts on society in the supply chain and actions taken

Incidences of discrimination and corrective actions	Operations with significant actual and potential negative impacts on local communities	Significant actual or potential negative impacts of labor practices in the supply chain and actions taken
Incidence involving violations of indigenous peoples rights and actions taken	Operations and suppliers participate in collective bargaining and exercise freedom of association	Total value of political contributions by country and recipient
		(add your own)

Appendix 4. Examples of environmental topics to review include but are not limited to:		
Air pollution	Invasive species	Reduction of energy consumption
Animal rights	Litter, visual pollution	Reduction in energy requirements of products and services
Biodiversity and water bodies affected by operations	Natural habitat restoration	Reduction of GHG, ODS, and other air emissions
Chemical spills	Natural resource usage	Renewable energy and materials
Compliance with environmental laws	Noise pollution	Responsible land use
Cultural heritage sites	IUCN red list species in areas affected by operations	Soil contamination
Customer disposal of products	Operational sights near areas of high bio diversity	Soil erosion/ depletion
Endangered species affected by operations	Odors	Spill prevention
Energy consumed within and outside of production	Ozone-depleting substances	Supplier environmental assessment
Energy conservation	% of materials by weight	Total water discharge, by quality and destination
Environmentally friendly design	% of materials that are recycled input materials	Total weight of waste and disposal method
Environmental protection expenditures, investments	% of water recycled or reused	Total number and volume of significant spills

Fines and sanctions for non-compliance with laws	% of products and their packaging material reclaimed	Waste disposal
Genetically modified organisms	Packaging reduction	Water conservation
GHG emissions: Scope 1, 2, and 3	Pollution prevention	Wetlands protection
GHG emission intensity	Precautionary principle in use with specific projects	Wildlife conservation
Habitat protected or restored	Product and packaging take-back	Water withdrawal by source
Transporting products, materials, and the workforce	Product energy use	Weight of transported, imported, or exported waste
Impacts within the supply chain and actions taken	Radio frequency exposure	
Impacts on biodiversity	Recycling, upcycling	
		(add your own)